

Designing the Close to Perfect Shared Use Path (the first time)

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Basics - Shared Use Paths/Multi-Use Trails

- ▶ Paved facilities separated from motorized traffic by open space or barrier
 - ▶ Within the highway right of way or an independent right of way
 - ▶ Minimal cross flow by motor vehicles
 - ▶ Used by bicyclists, pedestrians, runners, skaters, and in some cases equestrians
- ▶ Bicycle's operating characteristics govern the design
 - ▶ Typical adult bicyclist is the design user
- ▶ Serve as pedestrian facilities
 - ▶ 2006 Americans with Disabilities Act - Standards for Transportation Facilities
 - ▶ 2012 Florida Accessibility Code

Basics - Shared Use Paths/Multi-Use Trails



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Slide 3

False Creek Seawall Vancouver

What Criteria To Use?

- ✓ Check Table 3.1 in LAP Manual
- ✓ http://www.dot.state.fl.us/programmanagement/LAP/Current/CHAPTER_19_2016.pdf

TABLE 1: Project Classifications

**Full Manual titles and Topic Numbers are identified in the following paragraphs and Chapter 20*

Project Classifications	Design Criteria and Standards*	Specifications*	Materials*
Class A On the State or National Highway Systems	FDOT Plans Preparation Manual and FDOT Design Standards	FDOT Standard Specifications for Road & Bridge Construction	Samples Testing and Reporting Guide and FDOT Materials Manual
Class B Off the State and National Highway Systems with an estimated construction value of \$10 million or greater.	FDOT Plans Preparation Manual and FDOT Design Standards	FDOT Standard Specifications for Road & Bridge Construction	Samples Testing and Reporting Guide and FDOT Materials Manual
Class C Off the State and National Highway Systems and includes structural components: <ul style="list-style-type: none"> • a vehicular bridge • pedestrian bridge over a roadway • box culvert meeting the definition of a bridge as stated in 23 CFR 305 	1) For structures components, use the FDOT Plans Preparation Manual and FDOT Design Standards 2) For all other components, use the Florida Greenbook	1) For the structures components, FDOT Standard Specifications 2) For all other components, LAP Big 4 or approved Local Agency Specs	1) For structures components, use the Samples Testing and Reporting Guide and FDOT Materials Manual 2) For all other components, use Local Agency materials testing process
Class D Off the State and National Highway Systems, may include structural components: <ul style="list-style-type: none"> • pedestrian bridges not over a roadway • bridges on shared use path not over a roadway • box culverts that do not meet the definition of a bridge as stated in 23 CFR 305 	Florida Greenbook -or- Approved Minimum Design Standards chosen by local agency which conform to the minimum criteria provided in Florida Greenbook	LAP Big 4 or approved Local Agency Specs	Local Agency materials testing process

Table 3-1, LAP Manual

<p><u>Class D</u> Off the State and National Highway Systems, may include structural components:</p> <ul style="list-style-type: none">• pedestrian bridges not over a roadway• bridges on shared use path not over a roadway• box culverts that do not meet the definition of a bridge as stated in <u>23 CFR 305</u>	<p><u>Florida Greenbook</u></p> <p>-Or-</p> <p>Approved Minimum Design Standards chosen by local agency which conform to the minimum criteria provided in <u>Florida Greenbook</u></p>	<p><u>LAP Big 4 or approved Local Agency Specs</u></p>
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Width and Clearance Minimums

- ▶ Paved width for a two-way path is 10 feet
- ▶ Range from 10 to 14 feet (wider trails with high use or a wider variety of users, on steep grades)
- ▶ Rarely, 8 feet if:
 - ▶ Bicycle traffic is low, even on peak days or hours
 - ▶ Only occasional pedestrians expected
 - ▶ Frequent, well-designed passing and resting opportunities
 - ▶ Infrequent maintenance vehicle loading
 - ▶ Short distance due to a physical constraint (environmental feature, bridge abutment, utility structure, or fence)

Width and Clearance Minimums

- ▶ Graded shoulder ≥ 2 feet with 1:6 slope
 - ▶ 3 feet or more desirable (clearance from trees, poles, walls, fences, guardrails, etc.)
 - ▶ Adjacent to canals, ditches, or slopes steeper than 1:3, a wider separation recommended
- ▶ Separation from edge of path to top of slope ≥ 5 feet
 - ▶ Depending on height of embankment and condition at the bottom, a barrier may be needed
- ▶ Vertical clearance of 8 feet
 - ▶ 10 feet is desirable, especially if emergency vehicles need to pass through



Width and Clearance Minimums

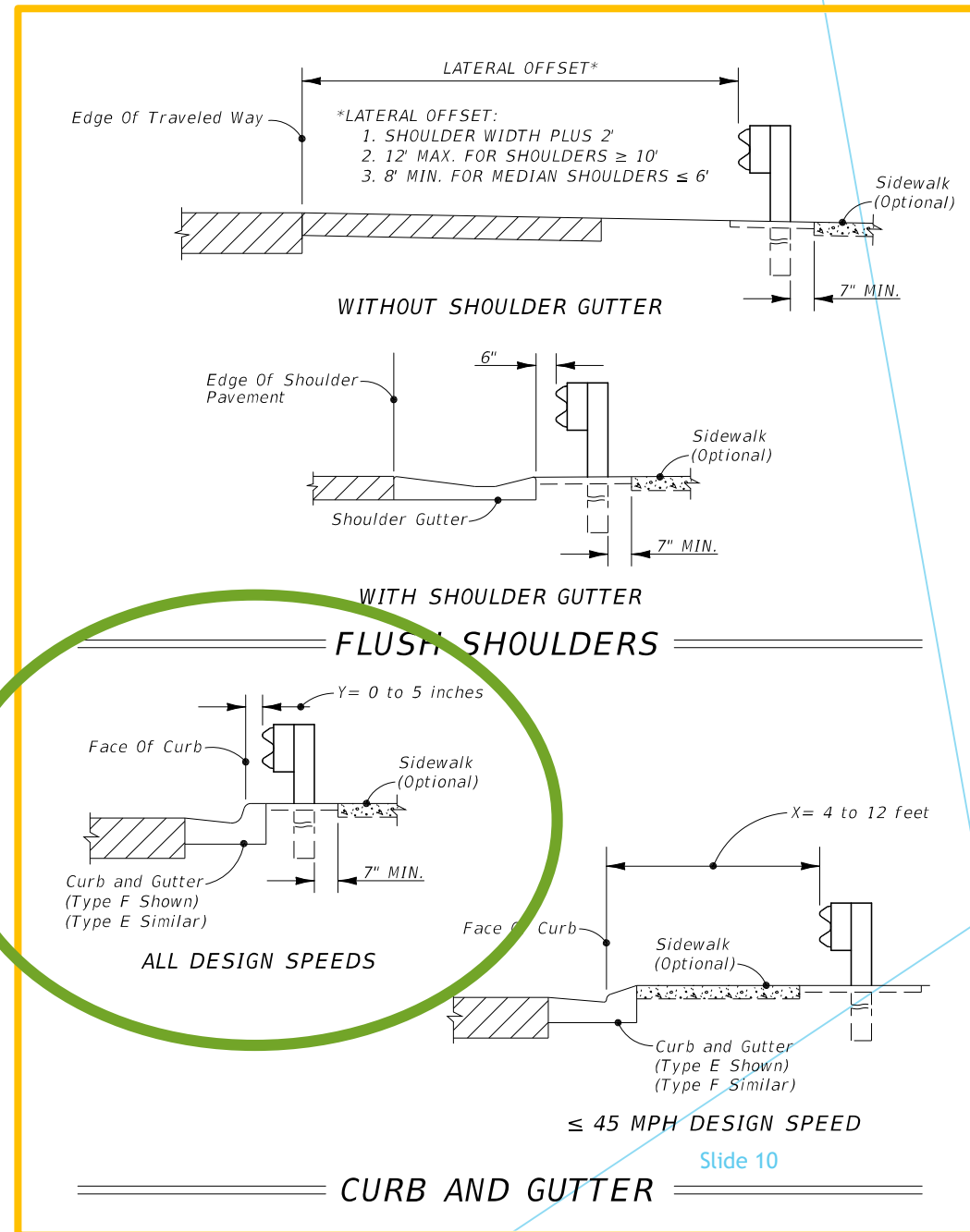


Separation between Path and Roadway

- ▶ Separation shall be provided
 - ▶ Demonstrates the shared use path is a separate facility
- ▶ At least 5 feet between path and face of curb/edge of traveled way
 - ▶ With flush shoulders, measure from outside edge of shoulder to inside edge of path
 - ▶ Where < 5 feet, a physical barrier or railing should be provided
- ▶ Doesn't need to redirect errant motorists unless other conditions indicate the need for a crashworthy barrier
- ▶ Barriers or railings at outside of structure/embankment to prevent bicyclists from falling ≥ 42 " high
- ▶ Barriers that separate the roadway from the path should have a minimum height of a standard guard rail
- ▶ Along a high-speed highway, a separation > 5 feet is desirable.

Separation between Path and Roadway

Figure 8 - 2, Pedestrian Facilities



Design Speed

- ▶ For paths in relatively flat areas (grades $\leq 4\%$) a design speed of 18 mph shall be used
- ▶ When a sustained downgrade greater than 4% exists, refer to the [*AASHTO Guide for the Development of Bicycle Facilities \(2012, 4th Edition\)*](#)



Boulder Creek Path

Ramp from Roadway Down to Path



Horizontal Alignment

- ▶ Refer to the AASHTO Guide for the Development of Bicycle Facilities (2012, 4th Edition) to determine the minimum radius of curves
- ▶ Transition towards the roadway at intersections to provide a more functional crossing location



Accessibility



Oak Leaf Trail

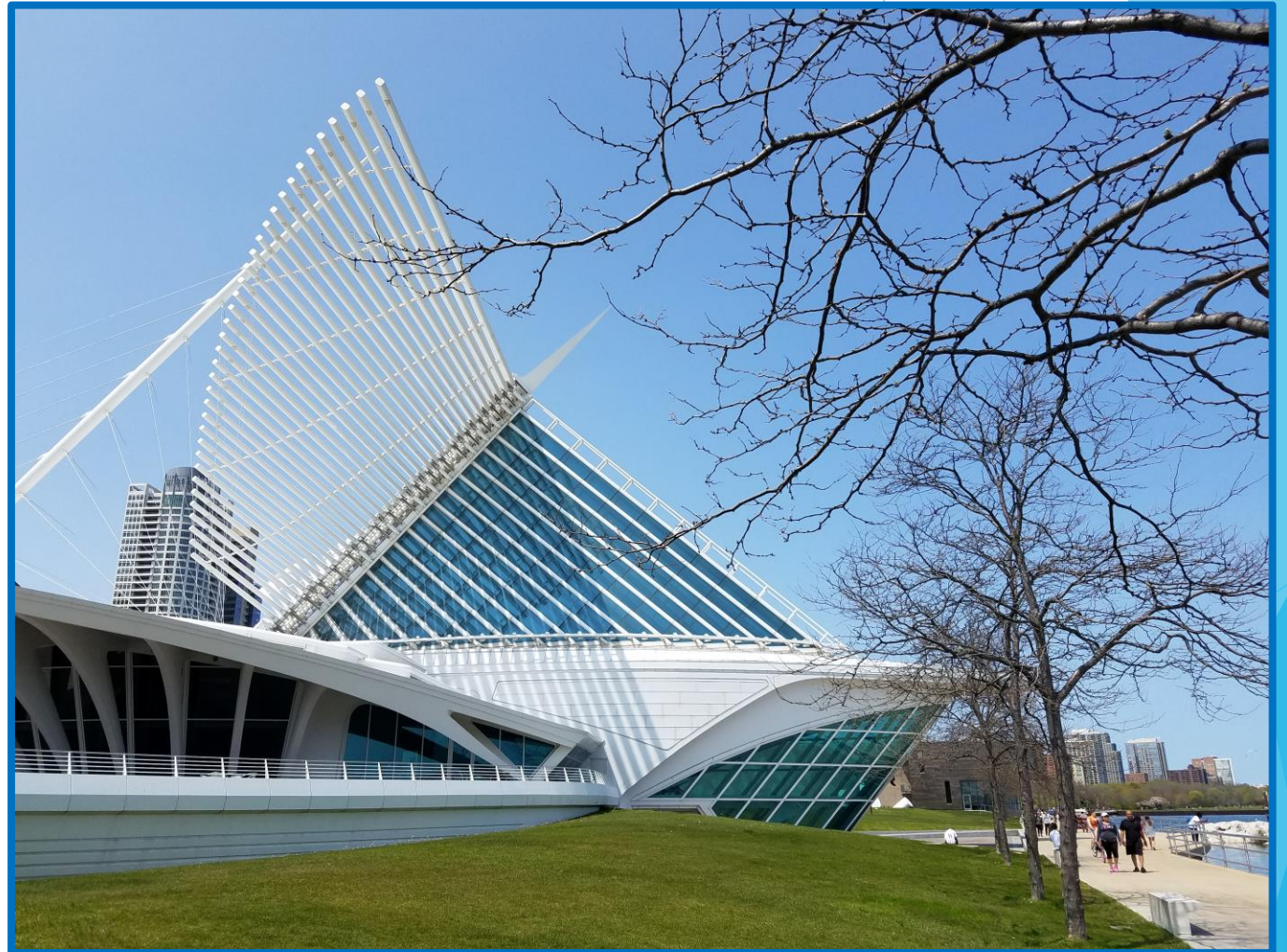
Slide 14

Accessibility



Hank Aaron State Trail

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Slide 15

Accessibility

- ▶ Americans with Disabilities Act applies
- ▶ Curb ramps should be parallel to and the full width of the path
- ▶ Same grade and cross slope requirements as sidewalks
 - ▶ Grade should not exceed 5%, cross slope no more than 2%
- ▶ Pull boxes, manholes, etc. in the curb ramp or detectable warning should be relocated when feasible
- ▶ Specify an appropriate detectable warning system compatible with path surface
- ▶ Evaluate existing driveways
 - ▶ Feasible to upgrade nonconforming driveway turnouts
 - ▶ Not required to be upgraded if not feasible within scope of project
- ▶ Chapter 8 - Pedestrian Facilities provides additional information

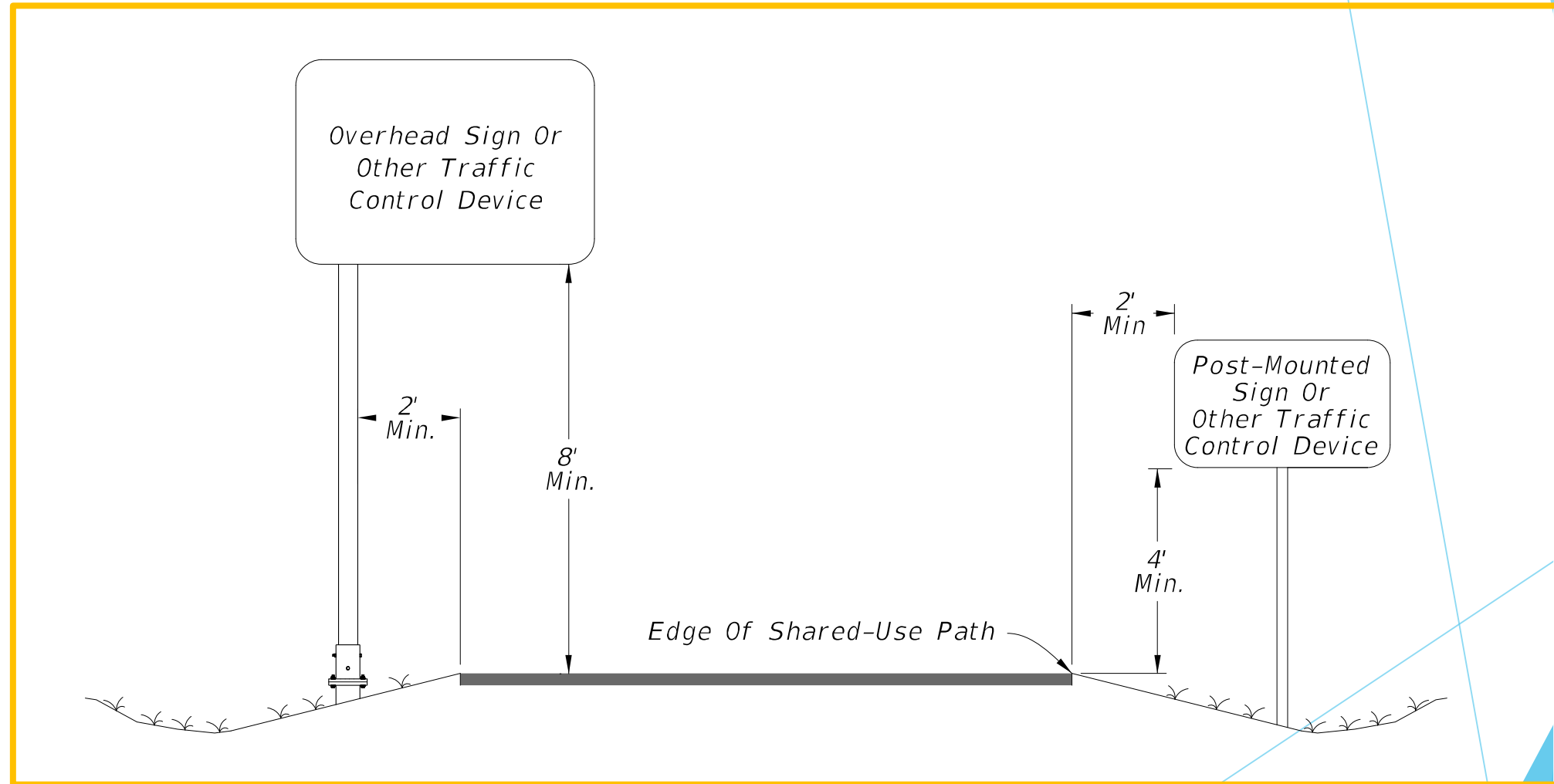
Structures

- ▶ Minimum clear width should be the same as the approach width, plus 2 foot wide clear area
- ▶ Access by emergency, patrol and maintenance vehicles should be considered for design clearances
 - ▶ Path vertical clearance of 10 feet (on the structure) is desirable
- ▶ Ramps shall have a running slope not steeper than 1:12, cross slope not steeper than 1:48.
 - ▶ Landings are required at the top and the bottom of each ramp run.

Pavement Markings and Signage

- ▶ MUTCD regulates the design and use of all traffic control devices on shared use paths
- ▶ Sign Placement on Shared Use Paths shown in Figure 9-27
 - ▶ Maximum height from the outside edge of the path to the bottom elevation of a sign is five feet
 - ▶ Sign dimensions provided in MUTCD, Table 9B-1 Bicycle Sign and Plaque Sizes
 - ▶ Placement of stop or yield lines and crosswalks provided in the MUTCD, Part 3

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Resources

- ▶ *Manual of Uniform Traffic Control Devices (MUTCD, 2009 Edition with 2012 revisions)*
- ▶ *Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; Shared Use Paths, United States Access Board*
- ▶ *AASHTO Guide for the Development of Bicycle Facilities (2012, 4th Edition)*
- ▶ *Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds (USFS, August 2009)*
- ▶ *Manuals and Guides for Trail Design, Construction, Maintenance, Operation and Signs, National Recreational Trails Program, FHWA*

Questions?

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